

# NREL's PV Tools on the Web: The OpenPV Project



**NREL TAP Webinar**

**Ted Quinby**

**March 24, 2010**

# Overview



Background



Structure



Status



Future



Demo



# Background

## Original Concept:

- Collect Data about PV installations in the United States
  - Size
  - Date
  - Cost
  - Location
- Provide public access to PV installation data

## Limitations:

- Spreadsheet data storage
- Yearly data updates
- Visualization an afterthought



# Background

---

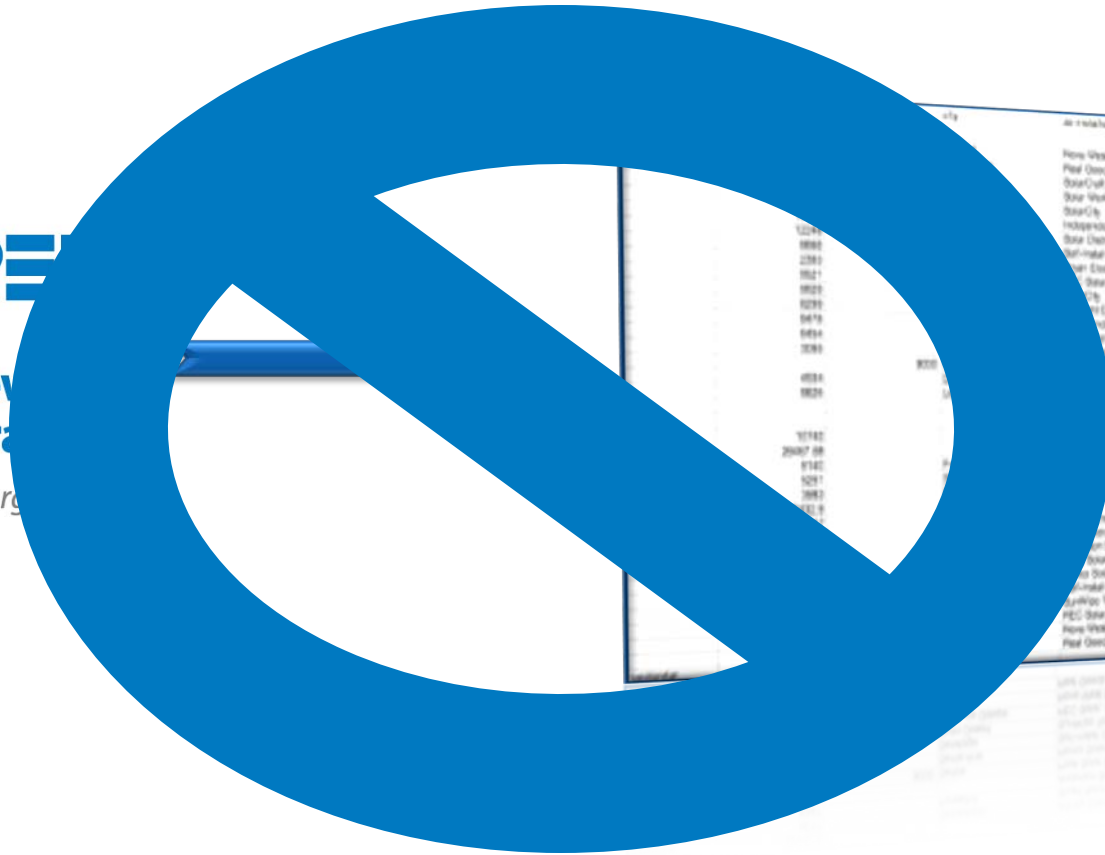
## Revised Concept:

- Develop living, breathing database
  - Leverage user contributions
- Cutting edge data delivery
  - Interactive map-based visualization

## New Goal:

- Collaborative effort between government, industry, and the public to build a dynamic, interactive, and comprehensive database of PV installations in the US
  - To build a community

# Background





# Background

## Utilities



A screenshot of a data table with multiple columns and rows, likely representing utility company information and solar installation data.

## Public Users



A screenshot of a data table with multiple columns and rows, likely representing public user information and solar installation data.

## PV Installers



A screenshot of a data table with multiple columns and rows, likely representing PV installer information and solar installation data.

## Gov't Agencies



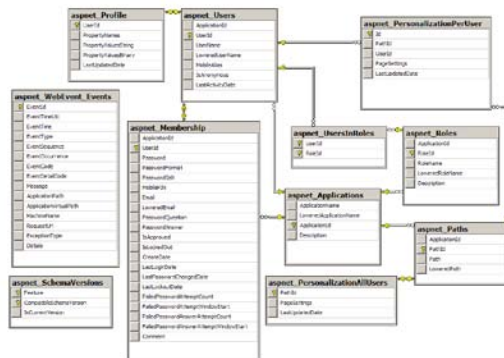
A screenshot of a data table with multiple columns and rows, likely representing government agency information and solar installation data.



# Structure

## Data

- A “schema-less” Database
  - 4 required fields:
    - Size, Cost, Date, Location
  - Anything else goes:
    - Incentives, Inverters, Installer, Etc...



# Structure

## Data

- Data Quality
  - Hierarchical scoring
    - Climbing the “scoring ladder”
  - User feedback
- Data Validation
  - Basic data validation on entry
  - Scheduled data validation routine
- Data Duplication
  - Scheduled data de-duplication routine





# Structure

## Website

- Info about the project
  - About
  - News
  - FAQ
- Account registration / login
- Data upload
  - Upload one or many records
- Data download
- Data exploration
  - Time mapper
  - Market mapper
  - Search capability

The screenshot shows the NREL Open PV Project website. At the top is the NREL logo and the text "National Renewable Energy Laboratory Innovation for Our Energy Future". Navigation links include Home, About, Explore, Search, Share Data, Contributors, News, Contact, and FAQ. The main content area is divided into several sections:

- Welcome:** A message from the Open PV Project, stating it is a community-driven database of photovoltaic (PV) installations. It includes a sun icon and a "Submit" button.
- Login:** A section for user authentication with fields for Username and Password, and a "Submit" button. Links for "Forgot your password?" and "Create a new account" are also present.
- Explore the Open PV Project:** A section for data exploration, featuring a "Visualize Open PV with the Market Mapper" button and a "Detailed search of database:" form with a "Search" button.
- National Statistics:** A section for national statistics, including a "Data Disclaimer" and a table of summary statistics.

The "Data Disclaimer" states: "The statistics, rankings, and other estimates presented by the Open PV Project are only estimates and do not represent the actual current market status. All values presented on this website will change as more data are added to the Open PV database. For estimates on the current state of the US PV market see: <http://www.irecusa.org/> and <http://eetd.lbl.gov/>."

The summary table shows the following data:

Summary	Installs (#)	Capacity (MW)	Cost (\$)
Total number of PV installations:	67392		
Installed Capacity (MW):		785.965	
Average cost per watt (2009):			\$ 8.01

# Status

## Project Totals (as of 3/23/10)

Number of installs:	69,869
Total capacity (MW):	784.74
Average cost/watt (2009):	\$8.01
Registered users:	720
Data contributors:	81

Contributor	# of Installs	Capacity (MW)
NREL	515	75.7
Gov't agencies	62,619	599.4
Utility, installer, public	6,735	109.64



# Status

## Top 5 States – Number of Installations (as of 3/23/10)

State	# of Installs
California	53,726
New Jersey	5,271
Massachusetts	1,919
New York	1,664
Arizona	1,470



# Status

## Top 5 States – Capacity (as of 3/23/10)

State	Capacity (MW)
California	489.661
New Jersey	123.938
Florida	29.924
Nevada	28.717
Colorado	28.453



# Status

## OpenPV vs. other data collection efforts

- IREC Report (through 2008)
  - Grid-tied installations: 69,000
  - Top 10 states capacity: 792 MW
  
- Tracking the Sun II (through 2008)
  - Installations: 52,356
  - Capacity: 566 MW
  
- OpenPV (through 2008)
  - Installations: 53,686
  - Capacity: 587 MW



# Future

## Continue data collection

- Become trusted and authoritative data repository

## Enhancements to foster user contributions

- Exposure for top contributors
- Unique contributor specific views of data
- Allow photo uploads and user comments

## Advanced tools

- Breakeven scenarios
- Web services (open access to data)

## International? Other technologies?



A rectangular solar panel with a grid of dark blue cells. The word "Demo" is written in white, bold, sans-serif font in the center of the panel.

# Demo

Current Release - <http://openpv.nrel.gov>